the *US Animal Health Association* and the *National Association of State Public Health Veterinarians* have adopted policy statements that milk and milk products for human consumption be pasteurized. In some 20 states where the sale of raw milk is legal, the AVMA has recommended that raw milk carry a warning label: "Not pasteurized and may contain organisms that cause human disease." Consumers should know the risks involved.

S. B. WERNER, MD

REFERENCES

Hazards of untreated milk. Lancet 1:705, Mar 28, 1981

Werner SB, Humphrey GL, Kamei I: Association between raw milk and human *Salmonella dublin* infection. Br Med J 2:238-241, Jul 28, 1979

Taylor PR, Weinstein WM, Bryner JH: *Campylobacter fetus* infection in human subjects: Association with raw milk. Am J Med 66:779-783, May 1979

Jensen LB: Poisoning Misadventures—Narrative Excerpts on Food-Borne Diseases and Poisoning for the Physician, Microbiologist, Attorney, and Nutritionist. Springfield, Illinois, Charles C Thomas, 1970

Current Testing of the Neonate

MANDATORY SCREENING of newborns for phenylketonuria (PKU) has been a public health program in all but a few states since the mid-1960's. In recent years more than half the states have expanded this preventive program to include hypothyroid and galactosemia screening.

Such programs function best when they are organized at the state level and include parental and physician education, centralized automated testing, regionalized follow-up services, access to expert diagnostic consultation and specialized referral centers for treatment.

These mass screening programs are intended to assist and supplement the clinical skills and judgments of physicians and not to replace them. It is important to pursue appropriate diagnostic tests immediately whenever history, symptoms or signs raise a suspicion of one of these diseases. Physicians should not wait for mass screening tests to make or rule out the diagnosis because there is the remote possibility of false negatives and there are always more false positives than true cases. As with any laboratory test, judgment must be used in deciding whether to repeat the test where there have been borderline results.

PKU screening has evolved from the semiquantitative microbiological inhibition assay developed by Dr. Robert Guthrie to a precise quantitative automated fluorometric analysis. This permits the selection of cutoff levels to minimize the false positives while still keeping an acceptably low rate of false negatives. The timing of the test has become an important issue because increasing numbers of infants are being discharged earlier than in the past. Prospective and retrospective studies of the screening results of classic cases sampled over the first four days of life support the concept that such testing has an acceptably low rate of missed cases even though slightly higher than later (after the fourth day) testing. Protein ingestion accentuates positive results but is not critical at the cutoff selected (4.3 mg per dl).

Additional screening information has uncovered a variety of hyperphenylalanemic syndromes in addition to classic PKU. These include transient to persistent hyperphenylalanemia with levels below 20 mg per dl, dihydropteridine reductase or biopterin deficiency, and transient PKU with acquired ability to metabolize phenylalanine. Because information on the diagnosis and treatment of these conditions is constantly growing, referral to or consultation with a metabolic center is highly desirable when there are positive results.

Hypothyroid screening is a two-stage process using thyroxine (T_4) as a prescreen. The lowest 5 percent of T_4 results are scheduled for thyroid-stimulating hormone (TSH) analysis. The absolute normal range of serum T_4 varies with an infant's age and can be transiently lowered by stressful conditions such as serious infection or respiratory distress. The 5 percent cutoff, therefore, will include many values that are physiologically normal or explainable by conditions other than hypothyroidism. The TSH analysis is the definitive screening test but by itself is not diagnostic. Most screening programs report even low level elevations of TSH (25 μU per ml) as positive. This might represent ectopic thyroid tissue that produces limited amounts of T_4 and could cease production at any time. Therefore repeat quantitative serum TSH, and, if available, iodine 123 scans are indicated. Hyperthyrotropemia and transient hypothyroidism must also be considered before instituting thyroxine therapy.

The statistically low T_4 levels with normal (less than 25 μU per ml) TSH results have also caused some concern. Most of these occur in premature infants, or indicate benign deficiency of thyroxine binding globulin. Secondary hypothyroidism is very rare (1 case per 100,000 births). Only one case of primary hypothyroidism has been discovered in a group of almost 5,000 infants with these results. Again it is strongly recommended

that any questionable screening results be reviewed with a pediatric endocrinologist.

Finally, galactosemia screening has been improved by quantitating and automating the galactose-l-phosphate uridyl transferase assay of Beutler. This has reduced the number of false positives although it will detect some of the low levels seen in variants such as the Duarte-galactosemia mixed heterozygote. Use of a blood galactose screen to resolve some equivocal results without collection of a venous specimen is being evaluated and also has the potential to pick up galactokinase, a clinically significant condition, and 4-epimerase, a benign condition. The safest course when suspicious results are obtained is to switch to a galactose-free formula for the infant and obtain consultation from a metabolic center. It should be remembered that after galactose exposure the urine may contain reducing substances when either transferase or kinase deficiency is present. Eyes should be examined carefully for diffuse metabolic cataracts and liver function should be checked whenever disorder of galactose metabolism is suspected. Because this is an enzyme test for which an infant's red cells are needed, test results may be obscured if a transfusion has been done.

Other hereditary metabolic conditions have been proposed and are being evaluated but have not met all the criteria necessary for inclusion in a statewide mandatory screening program.

GEORGE C. CUNNINGHAM, MD

REFERENCES

Mamunes P: Neonatal screening tests. Pediatr Clin North Am 27:733-751, Nov 1980

Meryash DL, Levy HL, Guthrie R, et al: Prospective study of early neonatal screening for phenylketonuria. N Engl J Med 304: 294-296, Jan 29, 1981

Fisher DA, Klein AH: Thyroid development and disorders of thyroid function in the newborn. N Engl J Med 304:702-712, Mar 19, 1981

Hadeed AJ, Klein AH, Fisher DA: Significance of transient postnatal hypothyroxinemia in premature infants with and without RDS. Pediatrics 68:494-498, Oct 1981

Control of Hepatitis A in Day-Care Centers

TRANSMISSION OF HEPATITIS A in day-care centers is an increasingly recognized problem. Outbreaks have been reported in at least 17 states in the past three years. Nationwide, between 9 percent and 12 percent of hepatitis type A or hepatitis, type unspecified, is estimated to be related to day-care centers, and in some areas has approached 40 percent.

Three characteristics are common to hepatitis outbreaks related to day-care: (1) hepatitis in children of day-care age is usually asymptomatic; (2) other members in the children's households are often infected as a consequence of spread within a center and generally constitute the majority of recognized cases; and (3) diapered children 2 years or younger are most likely to transmit infection to household contacts; children 4 years and older rarely spread infection beyond the center. Thus, center directors, parents, physicians and public health authorities should recognize that infection in families of children attending the center may indicate asymptomatic spread among children at the center.

Several factors may increase the risk of a hepatitis outbreak at a day-care center: (1) a large center population (more than 20 children), (2) long hours of operation (more than nine hours per day) and (3) the presence of diapered children under the age of 2 years. The last factor is the primary one in facilitating transmission of hepatitis A. In one study, after an index case occurred in a child or center employee, 70 percent of those centers enrolling children younger than 2 years had outbreaks; by contrast, 10 percent of the centers enrolling only children aged 2 years or older had outbreaks.

Prevention and control of hepatitis in day-care centers should focus on diapered infants and toddlers 2 years or younger. Maintenance of appropriate hygienic standards, particularly scrupulous handwashing by staff and of young children who cannot adequately wash themselves, must be emphasized. Surfaces on which diapers are changed should be impermeable and should be cleaned and disinfected with an appropriate germicide. The Centers for Disease Control recommend a 1:32 dilution (½ cup per gallon) of household bleach in tap water, prepared daily and dispensed in spray bottles. Accessory items, such as cans of baby powder and jars of vaseline or lotion, should also be disinfected each day, as they can be inadvertently contaminated with feces during a diaper change. Food must not be prepared or served on surfaces where diapers are changed. Health departments should provide periodic inservice training of day-care center staff for the prevention of hepatitis A and other fecally transmitted infections, for example, giardiasis and shigellosis.

Day-care-related outbreaks of hepatitis can be controlled in several ways. First, centers may suspend admission of new children or require them to receive prophylactic immune globulin (formerly called "immune serum globulin" or